

25

SEQUENCE LISTING

<110> Diamond, Don J

<120> IMMUNO-REACTIVE PEPTIDE CTL EPITOPES OF HUMAN CYTOMEGALOVIRUS

<130> 1954-384

<140> US 09/984365

<141> 2001-10-30

<150> US 09/692170

<151> 2000-10-20

<150> US 09/534639

<151> 2000-03-27

<150> US 09/075257

<151> 1998-05-11

<150> US 09/021298

<151> 1998-02-10

<150> US 08/950064

<151> 1997-10-14

<150> US 08/747488

<151> 1996-11-12

<160> 44

<170> PatentIn version 3.1

<210> 1

<211> 9

<212> PRT

<213> Human cytomegalovirus

<400> 1

Asn Leu Val Pro Met Val Ala Thr Val  
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<210> 2

<211> 9

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<222> (2)..(2)

<223> Xaa = L,I,M,T or V

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<222> (9)..(9)

<223> Xaa = V,A,C,I,L or T

<400> 2

Asn Xaa Val Pro Met Val Ala Thr Xaa  
1 5

<210> 3

<211> 11

<212> PRT

<213> Human cytomegalovirus

<400> 3

Tyr Ser Glu His Pro Thr Phe Thr Ser Gln Tyr  
1 5 10

<210> 4

<211> 11

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<213> Artificial Sequence

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<222> (2)..(2)

<223> Xaa = S, T or L

<400> 4

Tyr Xaa Glu His Pro Thr Phe Thr Ser Gln Tyr  
1 5 10

<210> 5

<211> 11

<212> PRT

<213> Human cytomegalovirus

<400> 5

Phe Val Phe Pro Thr Lys Asp Val Ala Leu Arg  
1 5 10

<210> 6

<211> 11

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<222> (2)..(2)

<223> Xaa = V or T

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<222> (11)..(11)

<223> Xaa = L, R or K

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Phe Xaa Phe Pro Thr Lys Asp Val Ala Leu Xaa  
1 5 10

<210> 7

<211> 10

<212> PRT

<213> Human cytomegalovirus

<400> 7

Thr Pro Arg Val Thr Gly Gly Gly Ala Met  
1 5 10

<210> 8

<211> 10

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<223> Xaa = L, F, or M

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Thr Pro Arg Val Thr Gly Gly Gly Ala Xaa  
1 5 10

<210> 9

<211> 8

<212> PRT

<213> Human cytomegalovirus

<400> 9

Phe Pro Thr Lys Asp Val Ala Leu  
1 5

<210> 10

<211> 11

<212> PRT

<213> Human cytomegalovirus

<400> 10

Arg Pro His Glu Arg Asn Gly Phe Thr Val Leu  
1 5 10

<210> 11

<211> 12

<212> PRT

<213> Human cytomegalovirus

<400> 11

Ser Val Leu Gly Pro Ile Ser Gly His Val Leu Lys  
1 5 10

<210> 12

<211> 13

<212> PRT

<213> Human cytomegalovirus

<400> 12

Pro	Thr	Phe	Thr	Ser	Gln	Tyr	Arg	Ile	Gln	Gly	Lys	Leu
1				5					10			

<210> 13

<211> 10

<212> PRT

<213> Human cytomegalovirus

<400> 13

Glu	Phe	Phe	Trp	Asp	Ala	Asn	Asp	Ile	Tyr
1				5					10

<210> 14

<211> 11

<212> PRT

<213> Human cytomegalovirus

<400> 14

Phe	Thr	Ser	Gln	Tyr	Arg	Ile	Gln	Gly	Lys	Leu
1				5					10	

<210> 15

<211> 23

<212> PRT

<213> Artificial Sequence

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<223> HCMV vaccine peptide

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<222> (4)..(4)

<223> Xaa = cyclohexylalanine

<400> 15

Ala Ala Lys Xaa Val Ala Ala Trp Thr Leu Lys Ala Ala Ala Asn Leu  
1 5 10 15

Val Pro Met Val Ala Thr Val  
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<210> 16

<211> 23

<212> PRT

<213> Artificial Sequence

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<223> HCMV vaccine peptide

<220>

<221> MISC\_FEATURE

<222> (4)..(4)

<223> Xaa = cyclohexylalanine

<400> 16

Ala Ala Lys Xaa Val Ala Ala Trp Thr Leu Lys Ala Ala Ala Asn Leu  
1 5 10 15

Val Pro Met Val Ala Thr Val



&lt;210&gt; 17

&lt;211&gt; 22

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HCMV vaccine peptide

&lt;220&gt;

&lt;221&gt; MISC\_FEATURE

&lt;222&gt; (3)..(3)

&lt;223&gt; Xaa = cyclohexylalanine

&lt;400&gt; 17

Ala	Lys	Xaa	Val	Ala	Ala	Trp	Thr	Leu	Lys	Ala	Ala	Ala	Asn	Leu	Val
1				5					10					15	

Pro	Met	Val	Ala	Thr	Val
					20

&lt;210&gt; 18

&lt;211&gt; 22

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HCMV vaccine peptide

&lt;220&gt;

<221> MOD\_RES

<222> (1)..(1)

<223> dextro

<220>

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<222> (3)..(3)

<223> Xaa = cyclohexylalanine

<400> 18

Ala Lys Xaa Val Ala Ala Trp Thr Leu Lys Ala Ala Ala Asn Leu Val  
1 5 10 15

Pro Met Val Ala Thr Val  
20

<210> 19

<211> 26

<212> PRT

<213> Artificial Sequence

<220>

<223> HCMV vaccine peptide

<400> 19

Val Ser Thr Ile Val Pro Tyr Ile Gly Pro Ala Leu Asn Ile Ala Ala  
1 5 10 15

Ala Asn Leu Val Pro Met Val Ala Thr Val  
20 25

<210> 20

<211> 22

<212> PRT

<213> Artificial Sequence

<220>

<223> HCMV vaccine peptide

<220>

<221> MISC\_FEATURE

<222> (3)..(3)

<223> Xaa = cyclohexylalanine

<220>

<221> MOD\_RES

<222> (22)..(22)

<223> AMIDATION

<400> 20

Ala Lys Xaa Val Ala Ala Trp Thr Leu Lys Ala Ala Ala Tyr Leu Val  
1 5 10 15

Pro Met Val Ala Thr Val  
20

<210> 21

<211> 22

<212> PRT

<213> Artificial Sequence

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<223> HCMV vaccine peptide

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<221> MOD\_RES

<222> (22)..(22)

<223> AMIDATION

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<221> MOD\_RES

<222> (1)..(1)

<223> dextro

<220>

<221> MISC\_FEATURE

<222> (3)..(3)

<223> Xaa = cyclohexylalanine

<400> 21

Ala Lys Xaa Val Ala Ala Trp Thr Leu Lys Ala Ala Ala Tyr Leu Val  
1 5 10 15

Pro Met Val Ala Thr Val  
20

<210> 22

<211> 22

<212> PRT

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<223> HCMV vaccine peptide

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<222> (22)..(22)

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<222> (3)..(3)

<223> Xaa = cyclohexylalanine

<400> 22

Ala	Lys	Xaa	Val	Ala	Ala	Trp	Thr	Leu	Lys	Ala	Ala	Ala	Asn	Leu	Val
1				5					10					15	

Pro	Met	Val	Ala	Thr	Val
			20		

<210> 23

<211> 22

<212> PRT

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<223> HCMV vaccine peptide

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<222> (22)..(22)

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<222> (3)..(3)

<223> Xaa = cyclohexylalanine

<400> 23

Ala Lys Xaa Val Ala Ala Trp Thr Leu Lys Ala Ala Ala Tyr Leu Val  
1 5 10 15

Pro Met Val Ala Ser Val  
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<210> 24

<211> 22

<212> PRT

<213> Artificial Sequence

<220>

<223> HCMV vaccine peptide

<220>

<221> MOD\_RES

<222> (22)..(22)

<223> AMIDATION

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<222> (3)..(3)

<223> Xaa = cyclohexylalanine

<400> 24

Ala Lys Xaa Val Ala Ala Trp Thr Leu Lys Ala Ala Ala Asn Leu Leu  
1 5 10 15

Pro Met Val Ala Ser Val  
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<210> 25

<211> 25

<212> PRT

<213> Artificial Sequence

<220>

<223> HCMV vaccine peptide

<220>

<221> MISC\_FEATURE

<222> (3)..(3)

<223> Xaa = cyclohexylalanine

<400> 25

Ala Lys Xaa Val Ala Ala Trp Thr Leu Lys Ala Ala Ala Ser Val Leu  
1 5 10 15

Gly Pro Ile Ser Gly His Val Leu Lys  
20 25

<210> 26

<211> 10

<212> PRT

<213> Human cytomegalovirus

<400> 26

Ile Leu Ala Arg Asn Leu Val Pro Met Val  
1 5 10

<210> 27

<211> 9

<212> PRT

<213> Human cytomegalovirus

<400> 27

Glu Leu Glu Gly Val Trp Gln Pro Ala  
1 5

<210> 28

<211> 9

<212> PRT

<213> Human cytomegalovirus

<400> 28

Arg Ile Phe Ala Glu Leu Glu Gly Val  
1 5

<210> 29

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Polyclonal helper T lymphocyte (HTL) peptide



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<221> MISC\_FEATURE

<222> (3)..(3)

<223> Xaa = cyclohexylalanine

<400> 29

Ala Lys Xaa Val Ala Ala Trp Thr Leu Lys Ala Ala Ala  
1 5 10

<210> 30

<211> 12

<212> PRT

<213> Artificial Sequence

<220>

<223> HCMV p65 vaccine peptide

<400> 30

Lys Ser Ser Asn Leu Val Pro Met Val Ala Thr Val  
1 5 10

<210> 31

<211> 12

<212> PRT

<213> Artificial Sequence

<220>

<223> HCMV pp65 vaccine peptide

<220>

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<222> (1)..(1)

<223> MONOPALMITATE

<400> 31

Lys Ser Ser Asn Leu Val Pro Met Val Ala Thr Val  
1 5 10

<210> 32

<211> 12

<212> PRT

<213> Artificial Sequence

<220>

<223> HCMV pp65 vaccine peptide

<220>

<221> LIPID

<222> (1)..(1)

<223> DIPALMITATE

<400> 32

Lys Ser Ser Asn Leu Val Pro Met Val Ala Thr Val  
1 5 10

<210> 33

<211> 29

<212> PRT

<213> Artificial Sequence

<220>

<223> HCMV vaccine peptide

<220>

<221> LIPID

<222> (1)..(1)

<223> DIPALMITATE

<400> 33

Lys Ser Ser Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr  
1 5 10 15

Glu Ala Ala Ala Asn Leu Val Pro Met Val Ala Thr Val  
20 25

<210> 34

<211> 29

<212> PRT

<213> Artificial Sequence

<220>

<223> HCMV vaccine peptide

<220>

<221> LIPID

<222> (1)..(1)

<223> TRIPALMITATE

<400> 34

Cys Ser Ser Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr  
1 5 10 15

Glu Ala Ala Ala Asn Leu Val Pro Met Val Ala Thr Val

<210> 35

<211> 28

<212> PRT

<213> Artificial Sequence

<220>

<223> HCMV vaccine peptide

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<221> MISC\_FEATURE

<222> (6)..(6)

<223> Xaa = cyclohexylalanine

<220>

<221> LIPID

<222> (1)..(1)

<223> DIPALMITATE

<400> 35

Lys	Ser	Ser	Ala	Lys	Xaa	Val	Ala	Ala	Trp	Thr	Leu	Lys	Ala	Ala	Ala
1				5					10				15		

Gly	Gly	Gly	Asn	Leu	Val	Pro	Met	Val	Ala	Thr	Val
			20					25			

<210> 36

<211> 28

<212> PRT

<213> Artificial Sequence

<220>

<223> HCMV vaccine peptide

<220>

<221> MISC\_FEATURE

<222> (6)..(6)

<223> Xaa = cyclohexylalanine

<220>

<221> LIPID

<222> (1)..(1)

<223> TRIPALMITATE

<400> 36

Cys Ser Ser Ala Lys Xaa Val Ala Ala Trp Thr Leu Lys Ala Ala Ala  
1 5 10 15

Gly Gly Gly Asn Leu Val Pro Met Val Ala Thr Val  
20 25

<210> 37

<211> 25

<212> PRT

<213> Artificial Sequence

<220>

<223> HCMV vaccine peptide

<220>

<221> MISC\_FEATURE

<222> (6)..(6)

<223> Xaa = cyclohexylalanine

<220>

<221> LIPID

<222> (1)..(1)

<223> DIPALMITATE

<400> 37

Lys Ser Ser Ala Lys Xaa Val Ala Ala Trp Thr Leu Lys Ala Ala Ala  
1 5 10 15

Asn Leu Val Pro Met Val Ala Thr Val  
20 25

<210> 38

<211> 29

<212> PRT

<213> Artificial Sequence

<220>

<223> HCMV vaccine peptide

<220>

<221> LIPID

<222> (1)..(1)

<223> DIPALMITATE

<400> 38

Lys Ser Ser Ile Ser Gln Ala Val His Ala Ala His Ala Glu Ile Asn  
1 5 10 15

Glu Ala Ala Ala Asn Leu Val Pro Met Val Ala Thr Val  
20 25

<210> 39

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> HCMV pp65 sequence variant

<220>

<221> MOD\_RES

<222> (9)..(9)

<223> AMIDATION

<400> 39

Asn Leu Val Pro Met Val Ala Thr Val  
1 5

<210> 40

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> HCMV pp65 sequence variant

<220>

<221> MOD\_RES

<222> (9)..(9)

<223> AMIDATION

<400> 40

Tyr Leu Val Pro Met Val Ala Ser Val  
1 5

<210> 41

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> HCMV pp65 sequence variant

<220>

<221> MOD\_RES

<222> (9)..(9)

<223> AMIDATION

<400> 41

Tyr Leu Val Pro Met Val Ala Thr Val  
1 5

<210> 42

<211> 20

<212> DNA

<213> Artificial Sequence



<220>

<223> DNA adjuvant containing CpG sequences

<400> 42

tccatgacgt tcctgacgtt

20

<210> 43

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> DNA adjuvant lacking CpG sequences

<400> 43

tccaggactt ctctcaggtt

20

<210> 44

<211> 12

<212> PRT

<213> Artificial Sequence

<220>

<223> HCMV p65 sequence variant

<400> 44

Thr Phe Thr Ser Gln Tyr Arg Ile Gln Gly Lys Leu

1

5

10